

## CLAIMS

What is claimed is:

- 1    1.    An RF power amplifier comprising:  
2    an integrated circuit;  
3    a first power amplifier formed on the integrated circuit, the first power amplifier having a  
4        first switching device;  
5    a second power amplifier formed on the integrated circuit, the second power amplifier  
6        having a second switching device, wherein the first and second power amplifiers  
7        are connected in a stacked arrangement between a voltage supply and ground; and  
8    wherein the first and second switching devices are electrically isolated from each other.
- 1    2.    The RF power amplifier of claim 1, wherein the first and second switching  
2    devices are electrically isolated by isolating the bodies of the first and second switching  
3    devices.
- 1    3.    The RF power amplifier of claim 2, wherein the bodies of the first and second  
2    switching devices are isolated by forming one of the switching devices in a deep N-well.
- 1    4.    The RF power amplifier of claim 3, wherein a bias voltage is applied to the deep  
2    N-well.

- 1 5. The RF power amplifier of claim 1, wherein the first and second switching  
2 devices are isolated by forming the integrated circuit using N<sup>-</sup> starting material.
- 1 6. The RF power amplifier of claim 2, wherein the bodies of the first and second  
2 switching devices are isolated using silicon on isolator technology.
- 1 7. The RF power amplifier of claim 1, further comprising a third power amplifier  
2 formed on the integrated circuit, the third power amplifier having a third switching  
3 device, wherein the first, second and third switching devices are electrically isolated from  
4 each other.
- 1 8. The RF power amplifier of claim 1, wherein the integrated circuit is implemented  
2 using CMOS technology.
- 1 9. A method of making a stacked RF power amplifier comprising:  
2 providing a CMOS integrated circuit;  
3 forming first and second stacked power amplifiers on the CMOS integrated circuit,  
4 wherein the first and second stacked power amplifiers each include at least one  
5 switching device; and  
6 electrically isolating a switching device of the first power amplifier with a switching  
7 device of the second power amplifier.

1 10. The method of claim 9, wherein the step of electrically isolating a switching  
2 device of the first power amplifier with a switching device of the second power amplifier  
3 further comprises isolating the body of the first switching device from the body of the  
4 second switching device.

1 11. The method of claim 10, further comprising forming a deep N-well in the  
2 integrated circuit.

1 12. The method of claim 11, wherein the switching device of the second power  
2 amplifier is formed using the deep N-well to provide isolation from the switching device  
3 of the first power amplifier.

1 13. The method of claim 12, further comprising applying a bias voltage to the deep  
2 N-well.

1 14. The method of claim 10, further comprising using silicon on isolator techniques  
2 for isolating the body of the first switching device from the body of the second switching  
3 device

1 15. A stacked RF power amplifier comprising:  
2 an integrated circuit;  
3 first and second stacked power amplifiers, wherein each power amplifier includes at least  
4 one switching device having a substrate; and

5 wherein the body of a switching device in the first power amplifier is electrically isolated  
6 from the body of a switching device in the second power amplifier.

1 16. The stacked RF power amplifier of claim 15, wherein the isolation is provided by  
2 forming one of the switching devices in a deep N-well.

1 17. The stacked RF power amplifier of claim 16, wherein a bias voltage is applied to  
2 the deep N-well.

1 18. The stacked RF power amplifier of claim 15, wherein the isolation is provided by  
2 forming the integrated circuit using N<sup>-</sup> starting material and forming the switching  
3 devices in P-wells.

1 19. The stacked RF power amplifier of claim 15, wherein the isolation is provided by  
2 using a silicon on isolator technique.

1 20. The stacked RF power amplifier of claim 15, wherein the integrated circuit is  
2 implemented using CMOS technology.

1 21. A stacked RF power amplifier formed on an integrated circuit comprising:  
2 a first transistor formed on the integrated circuit, the first transistor having a transistor  
3 body;  
4 a second transistor formed on the integrated circuit, the first transistor having a transistor  
5 body; and

6 wherein the transistor body of the first transistor is isolated from the transistor body of  
7 the second transistor.

1 22. The stacked RF power amplifier of claim 21, wherein the transistor bodies of the  
2 first and second transistors are isolated by forming one of the transistors in a deep N-well.

1 23. The stacked RF power amplifier of claim 21, further comprising the steps of:  
2 forming the integrated circuit using N<sup>+</sup> starting materials; and  
3 forming the first and second transistors in P-wells in the integrated circuit.

1 24. The stacked RF power amplifier of claim 21, wherein the transistor bodies of the  
2 first and second transistors are isolated using silicon on insulator technology.

1 25. The stacked RF power amplifier of claim 21, wherein the integrated circuit is  
2 implemented using CMOS technology.